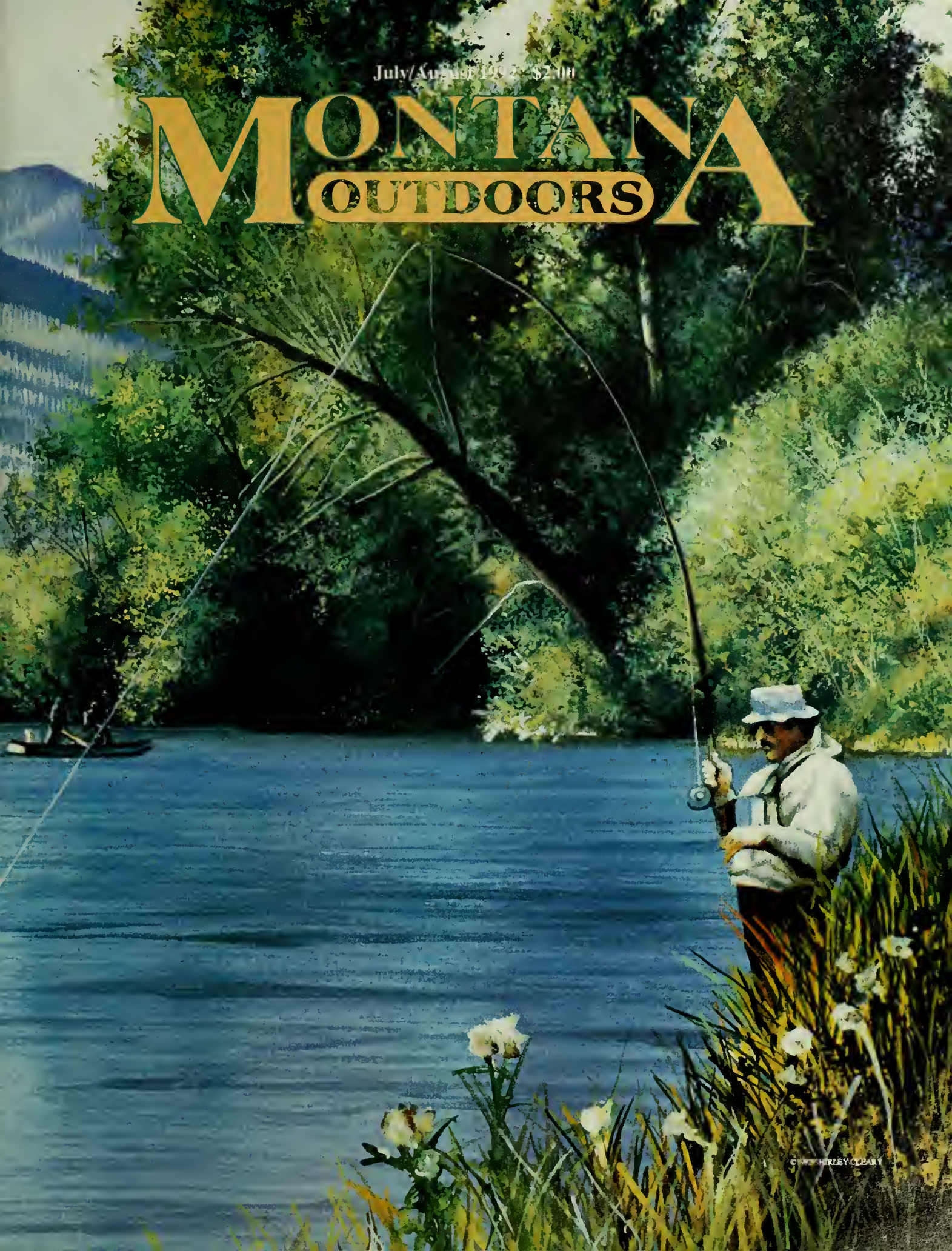
July/August 1992 $2.00

MONTANA OUTDOORS



Our Point of View

SEAN LOGAN

WHEN WE MONTANANS COMPARE our wild country and our tremendous wildlife and fisheries resources, we realize that we have saved more, used more, and now HAVE more than all our neighbors—east or west. This "Last Best Place" remains because Montanans care, and we believe that using it means never losing it.

We Montanans have maintained our wildlife and outdoor recreational heritage in the face of a changing frontier. We have clung to our freedom to use the outdoors to revitalize ourselves and our guests, while at the same time protecting and nurturing our wildlife populations and our fisheries.

Montana is a fiercely independent state. Yet, to maintain that independence, we will need to become inter-dependent. Our future depends on working together even more closely. Outside pressures—animal rights and anti-hunters from the East and Far West, the federal government, and others who don't live here (but just wish they did)—are more frequently trying (and now and then succeeding) to tell us what to do with our Montana. And nowhere have we recently received more of this input from outside "know-how" than in the area of anti-hunting. I would call to your attention Jim Heck's article, beginning on page 24 of this issue. Heck, a game warden for our department in Bozeman, does an insightful job of bringing the situation into focus. Perhaps better than anything I've read on this subject. All of us can learn something by carefully examining and weighing his words.

Perhaps we can even learn more from the example set by a special place within our borders. The people who live in Butte are fiercely independent, yet they "stick together." They make things happen. They are effective advocates for fish and wildlife and their community. They are independent, yet inter-dependent.

Now, more than ever before, Montanans need to develop the same kind of glue that binds Butte people together. We need to do this to safeguard our wild heritage and our ability to use the outdoors.

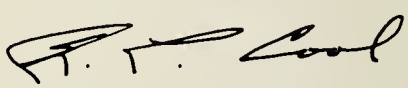
Governor Stan Stephens has initiated a Montana Landowner/Sportsman Council. The purpose of this statewide coalition of agriculture and sportsmen and government will be to improve and maintain favorable relations and communications between landowners and sportsmen and sportswomen under our Big Sky.

As a general statement, it can be said that landowner/sportsman relations are good. Yet, there is always room for improvement.

In future issues of this magazine, we will follow—closely follow—the progress of this important council. We will keep you updated as this advisory group of special Montanans works together to maintain and foster our outdoor heritage.

I ask your support for the council, perhaps even your active involvement. Everyone who cares about hunting, fishing, ranching, farming, and land or water management will be entitled to participate.

The council's progress will be a certain measure of our present culture; the results of its work, a certain measure of our outdoor recreational future.



K.L. Cool
Director
Montana Department of Fish, Wildlife & Parks

LHE KAISER

Celebrate the first 100 years of man venturing into "The Paradise Below." Turn to page 32 for particulars about "A Celebration of Discovery" at Lewis and Clark Caverns State Park August 8 and 9.

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COVERS

Covers—Helena artist **Shirley Cleary** has consistently impressed and delighted readers with her renditions of Montana fishing scenes. This issue's wrap-around cover calls attention to her considerable ability in re-creating river scenes, this one on the upper Big Hole. "Jumping Grayling" also calls attention to the fact that Montana's fluvial Arctic grayling is in trouble and concerned citizens must work together to prevent loss of a precious "Native on the Brink" (page 27).

Underwater Flier

by Deborah Richie

To naturalist John Muir, the dipper symbolized all that was joyous in nature. He wrote in his book, "The Mountains of California," in 1894: "He is the mountain streams' own darling, the hummingbird of blooming waters, loving rocky ripple slopes and sheets of foam as a bee loves flowers, as a lark loves sunshine and meadows. Among all the mountain birds, none has cheered me so much in my lonely wanderings—none so unfailingly. For both in winter and summer he sings sweetly, cheerily, independent alike of sunshine and of bird companionship, no other inspiration than the stream on which he dwells."

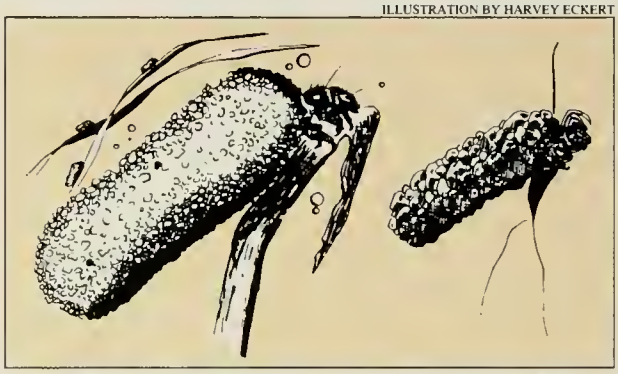
WE ARE CREATURES OF LAND. When we dive into water and exchange firm ground for the fluid realm of our ancestral past, we remain visitors among water dwellers.

Not so for the dipper, also called a water ouzel. This plump, starling-sized inhabitant of western mountain streams moves easily between land and water.

A dipper pops up from a swirling eddy with a dripping stonefly nymph in its bill, an appearance as startling as a jack-in-the-box. The gray bird with a rudderlike, stub tail hops up on a similarly gray rock protruding from the rapids. It grasps the slick stone with clawed pink feet, swallows the stonefly, and dips. Forty dips in a minute.

Try lying down at dipper level next to a riffle. Watch the spray rise and fall. Rapid dipping seems like a natural action in the midst of all this commotion. No study gives a convincing answer as to the real reason dippers spend so much time performing this athletic series of deep knee bends.

ILLUSTRATION BY HARVEY ECKERT



Case-building caddis fly larvae, a favorite underwater food of dippers, live in silken tubes cemented with sand or tiny sticks.

We may never solve the mystery of why dippers dip. We may never be able to see as a dipper sees, flying low above a stream or walking underwater. By watching the actions of this marvelously adapted creature, however, we may better appreciate the magic of a wild stream.

Naturalist John Muir was perhaps the first student of the dipper. In 1894, he wrote in "The Mountains of California": "No cañon is too cold for this little bird, none too lonely, provided it be rich in falling water. Find a fall, or cascade, or rushing rapid, anywhere upon a clear stream, and there you will surely find its complementary Ouzel, flitting about in the spray, diving in foaming eddies, whirling like a leaf among beaten foam-bells; ever vigorous and enthusiastic, yet self-contained, and neither seeking or shunning your company."

The American dipper *(Cinclus mexicanus)* is one of five species in the dipper family (Cinclidae) and the only one found in North America. Its niche falls along forested mountain streams from northern Alaska south to western Panama. The range stops along the line of central Alberta, the Black Hills of South Dakota, and the eastern Rocky Mountains.

I LIVE IN MISSOULA by Rattlesnake Creek, a perfect dipper creek. The waters rush down from the Rattlesnake Wilderness carving through rocky overhangs and shaded by deep spruce, cottonwood, and pine forests. The creek surges in my ears even in sleep. But I am an outsider listening to a foamy melody without understanding the instruments. Beneath the waters, caddis fly larvae rest within homes of glued pebbles, stonefly nymphs flatten on the side of algae-slick rocks, and cutthroat trout fan their fins in the calm of an eddy.

The dipper knows this world intimately. Like a scuba diver dressed to explore the ocean depths, the world's only aquatic songbird wears a coat of up to 6,300 outer feathers shielding a layer of insulating down.

For waterproofing, well-oiled feathers rival any wetsuit. Every bird possesses an oil gland just above the base of its tail for preening, but the dipper's is 10 times larger than that of other songbirds. Preening, using a bill as a comb, distributes the waterproofing oil from the gland, smoothes feather barbs so they will lock together, and removes dirt and parasites.

And like a scuba diver, the dipper is equipped with goggles. A milky nictitating membrane works as a third eyelid that can be drawn horizontally across the eye to shield the cornea from the spray of rapids and waterfalls. Watch for this flash of white when a dipper blinks.

The analogy goes further: natural nose plugs. A movable flap covers nostrils when underwater. And there the analogy stops. The dipper lacks webbed feet to propel itself through the water like a diver with fins. Instead, a dipper will actually fly underwater, reaching depths of 20 to 30 feet and staying under for half a minute. Sometimes it chooses to race along the stream bottom, unaffected by the tug of currents.

If we could walk the pebbly stream bottom beneath the oxygen-rich rapids, what would we find? Dipper food for one.

Unlike a warbler that heads south when winged insects disappear, a dipper selects from a bounty of delectable insect larvae hidden among the underwater rocks all winter. Caddis fly and stonefly nymphs appear to be favorites, with an occasional indulgence in a finger-sized fish.

The larval forms of flying insects compose only a few of a kaleidoscope of life forms, all thriving in whitewater too swift for people to stand upright in. The more complex the stream bottom, the more complex the life within it. Rounded river stones offer a better selection of homes for insects, mollusks, crustaceans, and flatworms than do sandy bottoms.

The millions of insects inhabiting a stream find homes under and between rocks, along the bottom, or in eddies (the calmer, swirling water below a rock). The spring hatches of flying insects dancing just above the river represent the brief culmination of several months in a larval stage beneath the surface. Some of these larvae have flattened bodies so they can slide easily beneath rocks. Many have grapples. One Montana biologist claimed he could predict the differing positions of 11 species of mayflies on a single stream boulder. Each species adapts to life at a different height, governed by the swiftness of the current and position of the boulder.

The dipper usually passes up the tinier insects, like mayfly larvae, for bigger bites. Caddis fly larvae, a dipper favorite in Rattlesnake Creek, provide one of the most remarkable examples of river adaptation. Some species of this order (Trichoptera) spin

ROBERT E. BARBER

Dippers scour the rocks just below the water's surface for insects, mollusks, crustaceans, and flatworms.

silken tubes in which they cement sand grains or tiny sticks. Protected by this decorative case, they use the fringed hair on their legs to go about the business of grazing moss and algae from rocks or catching food particles washed downstream. A dipper wading in the shallows with its head just below the surface scours the rocks for these crusty treats that may be an inch long and disguised in an array of shapes: slender, rectangular, arched, or coiled like a snail.

Another kind of caddis fly larvae lacking a case attracts a dipper to surging waters. Here, the web-spinning caddis hides in the tail of a fragile-looking, yet tough, web anchored between rocks at a rapid's brink. The web faces upstream to catch drifting, tiny organic materials called detritus.

THE MICROSCOPIC ELEMENTS of a river that come from decaying leaves, trees, algae, and moss drive the entire food web of the river. Insects that forage on the rich nutrients convert plant material to animal tissue. These insects become food for other insects, for dippers, and for fish that in turn feed kingfishers and otters. The web has many strands and no simple progression, but the more strands we discover, the greater is our respect for the interplay of life here.

Finding food may dictate much of a dipper's day, but a proper nest site defines a territory that a pair will aggressively defend from other dippers. Pairs will return to the same site year after year (a dipper may live six or seven years). A nest site must be close to the stream, above the high-water line, harboring a ledge or crevice for support and, most important, beyond reach of predators like a mink. The nesting success for dippers is 69%, compared with 46% for open-nesting songbirds and 66% for tree-hole nesters.

A study on Rattlesnake and Lolo creeks found that dippers increased their nesting territories by 26 miles because of bridges, whose underside beams amply meet the criteria. If a pair fails to find the ideal spot, they might take the risk of constructing a nest on a midstream boulder or within tangled tree roots.

Imagine being born behind the shimmering curtain of a waterfall, one of the best places for a dipper nest.

Muir took a close-up look at a dipper nest, writing: "The ouzel's nest is one of the most extraordinary pieces of bird architecture I ever saw....It is about a foot in diameter, round and bossy in outline, with a neatly arched opening near the bottom, somewhat like an old-fashioned brick oven, or Hottentot's hut. It is built almost exclusively of green and yellow mosses, chiefly the beautiful fronded hypnum that covers the rocks and old drift-logs in the vicinity of waterfalls. These are deftly interwoven and felted together into a charming little hut and so situated that many

ROBERT E. BARBER

LEE RENTZ

Woven from pine needles and green and yellow mosses, dipper nests provide a cozy home for the female's three or four chicks.

of the outer mosses continue to flourish as if they had not been plucked."

Once I watched a pair of dippers repairing a nest beneath a rock overhang six feet above Rattlesnake Creek. Instead of simply flying from the shore to the cliff with their beaks full of pine needles or moss, they first disappeared beneath the fast-flowing creek, emerged halfway across, and then flew up to the mossy clump that I knew concealed a snug inner cup lined with

Watch for Dippers

SONG: You may hear the song before glimpsing a bird that blends so well with the slate gray river rocks. When alarmed, the dipper calls in a rapid "bzeet" trill as it's flying a safe distance from you. Listen also for a lilting melody. In winter, when the forests are still, this song can be as startling as a flower blooming in snow.

DIPPER ID TIPS: Males and females are an identical gray with a tinge of chestnut brown on the head. A dipper is about the size of a starling, only much rounder with a pert, stub tail. The best place to spot one is on a rock in the middle or side of a stream. You may see a solitary dipper, a pair foraging near one another, or a small family group in summer. You might catch the dipping motion before you realize you're seeing a bird. Note the milky white flash of the nictitating membrane crossing the eye.

DIPPER SIGN: Look for whitewash on river rocks. These spots indicate favorite midstream perches for dippers. Look, too, for cliffs, waterfalls, and rocky overhangs. If you're a sharp observer, you may see the dome-shaped, mossy nest clinging to a cliff, or even on the beams of a bridge. Dipper pairs claim nesting territories and will remain in the area year-round, unless this part of the stream freezes over. Then dippers will fly downstream to open waters for the winter.

DIPPER FOOD: Turn over a rounded river rock in the shallows of a fast-flowing creek. You might find the pebble cases of caddis fly larvae. These cases protect the larvae from some predators, but not the dipper. Remember to put the rock back as you found it to give these ingenious insects a better chance of survival.

DIPPER WATCHING ETHICS: If you are quiet, you can observe dippers close up. However, if you see them fly away from you, it's a sign you've exceeded their comfort level. Some researchers found that dippers increase their dipping when alarmed. It's best to use binoculars, watch from a distance, and let them come to you.

DIPPER NEIGHBORS: Dippers share their watery homes with spotted sandpipers, birds that teeter back and forth and search for insects at the stream's edge. Look for belted kingfishers perched on dead limbs overhanging a stream. Mink and river otters ease over bank tree roots. Bats catch insects just above the stream in evenings. Nocturnal raccoons leave handlike prints on wet sands. Frogs idle on the surface of calm pools, while native trout and minnows rest below.

MICHAEL H. FRANCIS

River otter

ponderosa pine needles. One researcher suggested dippers deliberately moisten nesting materials to better weave them into the proper shape.

Late February marks the start of courtship, when a male starts a ritual feeding of a female. By March and April, the female is leading the male on a trilling, acrobatic chase, skimming the surface of falls or rising straight up, 30 feet in the air.

Between March and May, the dipper pair repairs or builds a new nest, sometimes on top of an old nest, in a clearly defined territory of about a half mile. One researcher witnessed a dipper hen pull the feathers of another nesting female until the ruffled hen left, never to return to the intruding nest.

The female lays her clutch of three or four eggs in spring. After 16 days, the chicks hatch to spend 24 days in the nest (twice as long as open-nesting songbirds). Both adults keep busy toting insects to the hungry chicks. Soon after the young dippers flutter out of their cozy shelter to the whitewater below, they are swimming and plucking whatever leaf or insect drifts by, quickly learning the difference between edible and inedible. Two weeks later, the juveniles are dipping as vigorously as their parents.

Late summer marks one of the few vulnerable times, when a dipper molts its feathers and is flightless for five days. Predators are few, consisting of an occasional swoop from a Coopers hawk, sharp-shinned hawk, or goshawk. These forest raptors, called accipiters, dart through trees and along brushy streams. Their wings are short. Their flight is sinuous and agile. When a dipper spies a hawk, it will flatten its body close to the surface of the water or rock, appearing to melt into the stream environment.

"Ouzels seem so completely part and parcel of the streams they inhabit," Muir wrote, "they scarce suggest any other origin than the streams themselves and one might almost be pardoned in fancying they come direct from the living waters, like flowers from the ground."

Special places on earth ring with the theme songs of the birds that inhabit them. The descending, dwindling notes of a canyon wren sweeten stark, desert cliffs. The bubbling melody of a meadowlark enriches grassy valleys. The crystal cascade of a singing dipper harmonizes with the music of the stream itself. ■

MARK LAGERSTROM

Dipper Conservation

The health of dippers is directly tied to the health of our rivers. A study of dippers on 13 rivers in Wales revealed that the birds were six times less common on streams with high acidity. In polluted areas subject to acid rain, sulphur dioxide and nitrogen oxides are washed into soils and eventually into rivers. Scientists determined the acidity greatly reduces populations of caddis flies, mayflies, and some small fish. They further found that caddis fly larvae comprise one-fifth of adult dipper food, but four-fifths of the nestlings' diet.

When we pollute our air, soils, and water or clear the forests that shade and add nutrients to our rivers, we threaten the future of the bird John Muir dubbed "the mountain streams' own darling."

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DEATH
at the Goat Lick

by JIM MEPHAM
photos by JIM MEPHAM AND STEVE TORNA

Spring marks the annual migration of mountain goats to a mineral lick on the southern boundary of Glacier National Park. Goats arrive there in spring and remain through early summer. The hotter temperatures of July normally force the goats back to the snow and rocks of the high mountain peaks.

JIM MEPHAM

Spring also marks the annual migration of fellow photographer Steve Torna and me to the goat lick. Like the goats, we go there to celebrate the arrival of spring and bid farewell to the last vestiges of winter.

Last winter's unseasonably warm weather gave way to an early spring in the high country of Glacier. During the last weekend in March, the sun beat down from a cloudless sky, pushing daytime temperatures to near 60 degrees. Where snow had melted on the south-facing slopes, spring and summer flowers were already putting in an appearance. It may have been the end of March, but in many areas it looked more like the middle of June.

On our arrival at the goat lick on Saturday, we spotted 24 goats basking in the warm sun. After shooting for several hours, we returned home confident we had captured our quarry on film.

On Sunday our quest started all over again. When we arrived in the morning the number of goats had increased to more than three dozen. More goats arrived as the morning wore on, and by noon there were at least 48. After lunch, we decided to hike up to a group of about 20 higher on the mountain for a change

JIM MEPHAM

of scenery. Our approach slowed to a near-crawl due to the steepness of the slope, the weight of our camera gear, and the warmth of the sun. The goats completely ignored us, choosing to concentrate on their day-long naps. Occasionally they stretched, as if to see if their legs still worked.

Suddenly the nap ended. All 20 goats jumped to their feet and stampeded down the mountainside, nearly running over us. The thundering hooves and cloud of dust more closely resembled a herd of buffalo than the delicate footwork of mountain goats.

Through the dust, the silhouette of a mountain lion could be seen riding the back of a nanny with its teeth clamped around her neck. The goat stumbled from the weight of the lion, momentarily regained her footing, then crashed to the ground. It was over as quickly as it started. The rest of the herd continued running another 50 yards downhill, then stopped, sensing that the danger, for them at least, was over. The cat lay on the goat, teeth gripping her throat, apparently monitoring the goat's pulse. Neither cat nor goat moved.

Adrenalin takes over when one witnesses an event in nature so rarely seen by humans. Our knees were knocking from excitement, but we

"The mountain lion momentarily released its grip as both animals went over the cliff..."

STEVE TORNA

"...but before the goat could regain its footing at the bottom, the cat had it by the neck again."

STEVE TORNA

"The cat looked at us and showed its teeth. We crept down the hillside toward safety..."

JIM MEPHAM

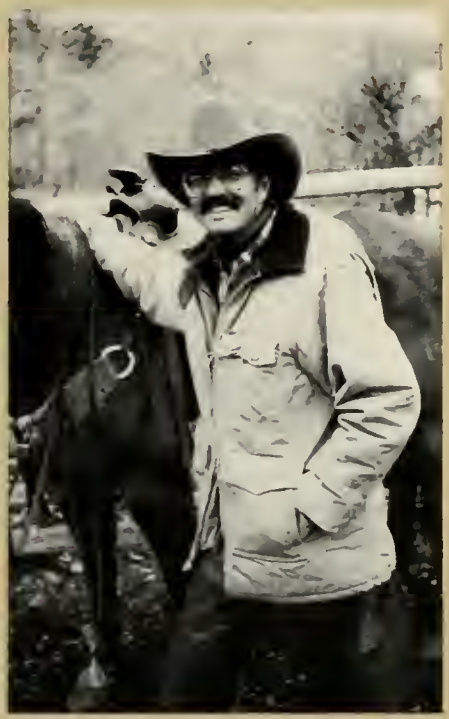
continued taking photos. The cat seemed unaware of our presence, but we were well aware that we were dangerously close to the predator's kill. After what seemed like an eternity (but which in reality was only five minutes), the goat gave an involuntary twitch and appeared to die. The cat sat up, spat some white fur, and surveyed the surroundings.

We could see no blood or any sign of a struggle. The rest of the herd had returned to a ridge above the kill to see what had happened, possibly out of curiosity or perhaps sensing the loss of a member of their social group. The cat eyed the goats and showed its teeth, but the mountain remained silent except for the far-off rush of the swelling Flathead River. At the sound of one of our camera motor drives, the cat perked up its ears, for the first time sensing our presence. Then it quietly walked into the trees.

After seeing the ease with which the cat took its prey, and not wanting to interfere with the natural scheme of things,we quickly began preparing for the trip back down the mountain. But a glance in the direction of the goats changed our plans. The predator was stalking for another kill. Knees bent, stomach close to the ground, tail erect, the cat advanced quickly toward the goats. At its approach, the goats once again took off down the mountain. The cat crouched, sprung forward, and had another goat in its grasp. Dust flew as the cat and the goat tumbled down the steep slope toward a rock outcrop and cliff. The mountain lion momentarily released its grip as both animals went over the cliff, but before the goat could regain its footing at the bottom, the cat had it by the neck again.

Another eternity passed as the goat and cat lay motionless in the ravine. The goat finally twitched convulsively and the cat released its grip. **We were only about 20 feet away!** The cat looked at us and showed its teeth. We crept down the hillside toward safety, awe-struck at what we had just witnessed. This time, the cat remained with its meal. ■

Ron Stevens of Bozeman



Chuck Rein of Big Timber

GOVERNOR NAMES CO-CHAIRS FOR LANDOWNER/SPORTSMAN COUNCIL

Governor Stan Stephens has appointed Chuck Rein of Big Timber and Ron Stevens of Bozeman as co-chairs of the Montana Landowner/Sportsman Council. The governor has directed the council to improve and maintain favorable relations and communication between Montana's landowners and sportsmen and -women.

Rein, a third-generation rancher and the owner/operator of Anchor Outfitting, is a member of the Montana Stockgrowers Association board, the Western Environmental Trade Association, and the Sweet Grass County Preservation Association. He also is a past director of the Sweet Grass County Farm Bureau.

Stevens, a retired U.S. Army colonel with 32 years active duty, is an avid hunter who serves on the board for the Public Lands Access Association, Inc. Stevens was the association's president from 1989 until January of this year.

The remainder of the 20-member council comes from statewide agricultural, private lands, and sportsmen's organizations, as well as state and federal resource and land management agencies. In addition to the official council members, any organization or individual interested in hunting and fishing, ranching, farming, or any land and water management issue is encouraged to participate in the council proceedings.

An organizational meeting of the Montana Landowner/Sportsman Council was conducted June 20 in Helena. Plans were made for the first formal gathering later this summer.

The Department of Fish, Wildlife & Parks provides funding and administrative support for the council.—*Michael Korn, FW&P Landowner/Sportsman Relations Coordinator, Helena*

BIVINS NAMED "WILDLIFE OFFICER OF THE YEAR"

Tom Bivins, a Department of Fish, Wildlife & Parks game warden in Choteau, was named the 1991 recipient of the prestigious Shikar-Safari International's Wildlife Officer of the Year Award for Montana.

Bivins, a 24-year veteran of the department's Enforcement Division, began his career in Bozeman. He was the district warden in Havre, Chinook, Ennis, and Forsyth before his transfer to Choteau in 1980.

The Shikar-Safari award winner is selected by the FW&P director from nominations submitted by wardens in each of the department's eight administrative regions. Winners are selected on the basis of their professional relationship with sportsmen and landowners in their region, performance and dedication to duty, and their participation in activities outside daily enforcement work.

The Shikar-Safari awards, presented annually by the club to one wildlife enforcement officer in each state, has been presented to a Montana game warden each year since 1969.

Tom Bivins

Bivins was recognized not only for his accomplishments as a field officer who has donated countless hours in pursuit of wildlife law violators, but also for gaining the trust and respect of both landowners and sportsmen. His desire to share his knowledge and love of wildlife with the youngsters of Montana was also acknowledged.

"Education has always been a major component in all of Tom's work," said FW&P Director K.L. Cool in his letter nominating Bivins. "Through his involvement with hunter education, area schools, and 4-H programs, he has stimulated interest in wildlife and helped to instill in our youth the values of ethical responsibility toward wildlife. These efforts are invaluable for the future of any wildlife program."

In his nominating letter, Cool also

noted Bivins' personal involvement in many conservation and wildlife law enforcement organizations. Bivins laid the groundwork for establishment of a Ducks Unlimited chapter in his district and later served as that chapter's chairman. He also was one of the founding fathers and served as the second president of the North American Wildlife Law Enforcement Officers Association, an organization with members in all 50 states, Canadian provinces, and many other nations. The organization provides education and assistance to wildlife law enforcement officers and an invaluable communications network to assist in protecting wildlife across North America and around the world.

Bivins is also president of the Montana Game Wardens Association.

"Marking a New Era in Wildlife Conservation"

Representatives from conservation groups, natural resource agencies, travel/tourism organizations, and communities will converge on Missoula September 10-12 to forge a common vision based on the growing interest in wildlife viewing.

The National Watchable Wildlife Conference features a wide-ranging agenda with more than 50 speakers. Five hundred participants are expected. The theme, "Marking a New Era in Wildlife Conservation," reflects the immense potential of watchable wildlife to build greater support for wildlife and habitats and to help communities diversify their economic bases.

Examples of scheduled panel topics include "Wildlife Viewers: Who Are They, What Do they Want?" "The Concrete Urban Environment: Is There Any Wildlife There?" and "Watchable Wildlife and Education: A Perfect Partnership."

Also featured is the Western States and Provinces Watchable Wildlife & Nongame Symposium on September 9. This session is designed primarily for wildlife and fisheries biologists. Two controversial topics to be explored in panel sessions are declining amphibian populations and neotropical migratory birds.

The Department of Fish, Wildlife & Parks is co-sponsor of both conferences, along with many other state and federal agencies, private businesses, and non-profit groups.

Registration is $150 for the National Watchable Wildlife Conference and $35 for the Western States and Provinces Watchable Wildlife & Nongame Symposium. For a registration packet, write National Watchable Wildlife Conference, P.O. Box 497; Green Mountain Falls, CO 80819-0497 or call 719/-475-0469. For information locally, contact Deborah Richie at 406/542-5530 or Betsy Spettigue at 406/444-1276.

Mike Thompson

The Wildlife Society Honors Mike Thompson

Mike Thompson, a wildlife biologist for the department in Region Two (Missoula), was named biologist of the year by the Montana Chapter of The Wildlife Society.

Thompson has worked with the department for nearly 12 years, performing elk research in the Elkhorn Mountains near Helena and evaluating impacts of the Bonneville Power Administration transmission line on elk in western Montana. He is in charge of the wildlife management areas (WMAs) in his region and several hunting districts in the Blackfoot area.

Thompson has met his responsibilities as a wildlife biologist and WMA manager with innovative programs. The recently implemented grazing and agricultural leases on the Blackfoot-Clearwater WMA reflect a great deal of effort in developing programs with adjacent landowners. These leases will not only address goals and objectives for managing soil and vegetation on the WMA, but will also improve winter range on adjacent private land and improve landowner tolerance for elk.

He has been effective in involving the public in the decision-making process with major issues. He has worked hard for and earned the support and respect of the public and agency personnel in effecting positive change in several areas. Through extensive public involvement, he has developed and implemented new hunting season and road closure management strategies (with cooperation of the Lolo National Forest) to improve bull elk survival in Hunting Districts 282 and 285. He developed and continues to monitor an effective road management program at the Three Mile WMA which received considerable opposition at first, but was modified after public meetings and comments and now is supported by most hunters.

Thompson's public involvement efforts include other activities such as establishing an advisory council to provide input and exchange ideas regarding management of the Blackfoot-Clearwater WMA; working with landowners, sportsmen, and Ducks Unlimited to develop wetlands to improve waterfowl habitat; and initiating intensive weed control efforts on the WMAs in Region Two. He also began a weekly information column for the Pathfinder, the newspaper in Seeley Lake. His column communicates information about wildlife issues to over 1,200 area subscribers.

His pro-active approach to important resource issues has reflected a credible image for wildlife biologists and improved the department's image with the public.—*John Firebaugh, Region Two (Missoula) wildlife manager*

Park Rangers Commissioned

The department's first park rangers were sworn in at a recent meeting of the Montana Fish, Wildlife & Parks Commission. Pictured above (from left) are Ken Bell, Marty Watkins, Woody Baxter, and Harley Sorrells. Bell and Sorrells received their basic certificate from Gene Kiser, executive director of the Montana Peace Officers Standards and Training Advisory Council.

To protect those using the parks and the natural and cultural resources in them, the 1991 Montana Legislature passed the "Park Ranger Bill." Among other things, the bill established a new class of peace officer for the state of Montana—the park ranger. The job of the park ranger is to make sure that Montana's state parks will be here for a long time, that people do not steal stalagmites from caverns, that vandals do not walk away with ghost towns piece by piece, that thefts from campers do not drive visitors away.

The department now has two types of peace officers. Fish and Game wardens have a long history of service to the state, and they will work with park rangers to help secure Montana's heritage of natural and manmade wonders.

New Law Opens State Lands to Hunting, Fishing

On March 1, approximately 5.2 million acres of state trust lands in Montana was officially opened, with certain restrictions, to licensed hunting and fishing as the result of a bill passed by the 1991 Montana Legislature. Recreationists recognize these areas as those colored blue on most land ownership and access maps produced by the USDA Forest Service and Bureau of Land Management.

Included in the provisions of the new State Lands Recreational Use Law is a requirement that all resident and non-resident hunters and anglers 12 years of age and older purchase a $5 recreational use license to use state lands for any form of fishing and hunting that requires a license from FW&P. Recreational use licenses, issued by the Montana Department of State Lands (DSL), now are available at all FW&P offices and most FW&P license agents in the state.

State trust lands were granted to Montana by the federal government at the time of statehood to produce income for supporting public education and public institutions. In abiding with the provisions of those land grants, Montana law has long required that state lands be managed to produce revenue for the state's schools. As such, $3 from each $5 recreational use license sold goes into educational trust accounts. The remaining $2 is used for administration of the law, to control noxious weeds on state lands resulting from recreational use, to pay lessees for damages to private improvements on state lands resulting from recreational use, and to pay commissions to license vendors.

Under rules adopted by the State Land Board for implementing the new law, scouting for big game is permitted on leased state lands the weekend before a hunting season opens as well as on the day immediately preceding the opening. Those scouting for game on leased state lands, as well as those accompanying or assisting a person engaged in licensed hunting and fishing, also must possess a recreational use license. A special recreational use license, also issued by the Department of State Lands, is required for camping on leased lands at other than designated campgrounds, for commercial recreational activities such as outfitting, and for non-commercial recreational activities by organizations.

Licensed hunters and anglers who have purchased recreational use licenses are the only recreationists granted use of most leased lands. Some lands are categorically closed to recreational use due to the existence of growing crops, the presence of home sites or cabin sites, etc. In addition, lessees may require notification from hunters and anglers before they enter leased state lands. In such a case, the lessee will post signs indicating the notification requirement.

Persons engaged in recreation other than licensed hunting and fishing, such as sightseeing, picnicking, and hiking, do not need a recreational use license to enter leased state lands. However, they

do need permission from the lessee if those lands are posted against trespass.

Recreationists should note that of the approximately 4.8 million acres of trust land under grazing and agricultural leases or some other licensing agreement in Montana, only about two-thirds are accessible from public roadways, waterways, or adjoining public lands. As a result, recreationists who desire to use portions of the remaining third of those lands not publicly accessible must secure permission from a surrounding landowner to reach those lands. A recreational use license does not give the holder the right to cross private lands to reach state lands.

The Department of State Lands has produced a brochure outlining provisions of the new law and a question-and-answer fact sheet to help recreationists understand those provisions. Copies can be obtained from DSL and FW&P offices and from most license agents across Montana. Questions concerning the new law should be addressed to the nearest Department of State Lands field office.—*William Phippen, Region Eight (Helena) information officer*

Montana State Parks Calendar

JULY

4—Fort Owen Day, Fort Owen State Park

Ceremony and celebration to commemorate Montana's first permanent white settlement in 1841.

18 and 19—Bannack Days, Bannack State Park

Return to the Territorial capital as it was a hundred years ago. Stagecoach rides, soap-making, main street gun fights, old-time dancing, lots of music, and good times for the whole family.

AUGUST

8 and 9—Discovery Days, Lewis and Clark Caverns

Reunion of Civilian Conservation Corps members and former caverns employees for the anniversary of the caverns. Potluck picnic, tours, history. A two-day celebration of the discovery of the cave.

22—Kids' Day, Spring Meadow Lake State Park

One last day of fun before school starts. Food, fun, and prizes for kids.

23—Senior Day, Spring Meadow Lake State Park

A day of activities for all senior adults. Free food and prizes.

SEPTEMBER

20-26—Native American Awareness Week, Chief Plenty Coups State Park

Various activities for all ages focusing on Native American culture, history, and dress.

OCTOBER

Off-season camping fees now in effect

Cost is $4 per night with a State Park Passport.

NOVEMBER

Eagle watch, Canyon Ferry State Park, Riverside

Mid-November through mid-December, view the majestic bald eagles as they flock to this area to feed on spawning kokanee salmon.

Book Review

ELK COUNTRY, by Dr. Valerius Geist, photography by Michael H. Francis, NorthWord Press, Inc., P.O. Box 1360, Minocqua, WI 54548; 1991, 176 pages, hard cover, $39.

Author-biologist Valerius Geist, a professor of environmental sciences at the University of Calgary, is one of the world's foremost authorities on elk. As he explains in this informative book, the elk of North America are closely related to the red deer that inhabit Europe and Asia. Like the grizzly bear and timber wolf, the elk is a recent newcomer to North America, arriving here via the Bering Land Bridge from Siberia some 10,000 years ago. He notes that the elk living today in northern Mongolia and adjacent areas in southern Siberia are identical to our North American elk.

Like other animals of open country (prior to settlement, elk were primarily plains animals), elk evolved with a strong herd instinct and a capacity for swift, sustained running to escape predators. According to Geist, animals that live in herds have complex behavioral adaptations governing breeding, foraging, and caring for young. Newborn elk calves are well camouflaged and nearly devoid of scent. Relatively well developed at birth, they mature quickly and are soon capable of running with their mother to escape danger.

The herd behavior also explains why the rutting ritual in elk is much more elaborate and spectacular than in deer, caribou, and moose. Bull elk must advertise their worth to maintain a harem of females, while buck deer search out and breed a succession of does dispersed throughout their territory. As Geist points out, "Prime bulls advertise their presence with a loud, distinct voice, by distributing scent and by making themselves conspicuous. The aim: to attract females whose movements they will control and which they will hold in harems."

All facets of the elk's life history are superbly illustrated by Michael H. Francis' remarkable color photos. A Billings-based wildlife photographer, Francis has spent the better part of two decades capturing elk and elk behavior on film through all the seasons. Mike's photography has graced the pages of many books and magazines (including *Montana Outdoors*) and has been internationally recognized for its excellence. In this book, he has truly captured the spirit of elk country.

The last chapters of the book deal with the bond between elk and elk hunters and future of this magnificent game animal. Geist reminds us that elk and their red deer ancestors have been a source of sustenance to mankind for more than a quarter of a million years. Yet, the elk roast in a hunter's house, he maintains, is more than the meat: "The meat of an elk from the mountains is a part of the mountains. It is a product of virgin wilderness soils, crystal clear waters, the flowers, grasses and trees that grow there, and the rain and snow that falls. We are what we eat, and by eating the elk we become, in a very literal sense, a part of those wild, clean mountains."—*Dave Books*

INTER-FLUVE, INC.

MONTANA MOVES MOUNTAINS
for Wild Trout

by TAD BROOKS

WILD TROUT. To serious trout anglers across the country, the words are synonymous with Montana. Wild trout live in harmony with their environment and possess a natural vitality that appeals to many fishermen. Montana's stream trout fisheries are almost entirely self-sustaining and are the envy of the nation. The Montana Department of Fish, Wildlife & Parks (FW&P) has not stocked hatchery fish in the state's streams and rivers since the early 1970s.

INTER-FLUVE, INC.

Wade Lake, one of Montana's best big trout fisheries, is fed by a strong-flowing 40°F spring. But the 40-square-foot bed of gravel receiving the spring's flow (above) was too small to provide an adequate spawning area.

Lakes and reservoirs, however, are another matter. Where conditions aren't suitable for natural reproduction, stocking hatchery fish is necessary and desirable, and FW&P maintains a state-of-the-art hatchery system for that purpose.

To have a *self-sustaining* trout population in a lake or reservoir, adequate spawning streams or springs with good flows of high-quality water must be present. In recent years, where such conditions exist, FW&P biologists have attempted to establish strains of wild trout. These are fish hatched from eggs collected from native-spawning adults or from genetically wild hatchery broodstocks.

A case in point is Wade Lake near the Idaho border, one of a string of lakes that feed the famous Madison River. One of southwestern Montana's few high-mountain lakes that can be reached by car, Wade Lake is home to bald eagles, otters, and an occasional grizzly bear, and is serviced by a public campground and small resort. The lake is fed by a strong-flowing 40°F spring, and is rich in vegetation, plankton, and aquatic insects.

But the 240-acre lake is lacking in spawning habitat; a mere 40-square-foot bed of gravel receives the spring's flowing water, and spawning fish often dig up and destroy each other's eggs in the effort to lay their own. Other fish, unable to approach the gravel beds, discharge their eggs in deep water, or simply absorb them and don't spawn at all.

To rectify the situation, last summer the state and federal governments moved part of a mountain to create a wild trout fishery in Wade Lake. Using $115,000 of sportsmen's money earmarked for habitat improvement under the federal Sikes Act and state licensing laws, the agencies paid Inter-Fluve, Inc., a Bozeman-based natural resource reclamation firm, to construct a meandering, 600-foot-long spawning channel at the lake's source.

Designed to mimic a natural stream environment while at the same time maximizing spawning capacity, the 12-foot-wide channel is expected to yield thousands of rainbow trout fry a year and eliminate the need to stock the lake.

Wade Lake was first stocked in 1930 with coho salmon, and later with cutthroat trout, neither of which successfully reproduced. Rainbow trout were added to the mix and, in 1950, brown trout were released. In 1966, the lake yielded Montana's biggest brown trout on record, a 29-pound leviathan. Since 1984, the lake has been stocked with wild strains of rainbow trout.

Today, Wade Lake is among Montana's best big trout fisheries. Creel surveys in recent years show the average rainbow measures 18 inches or more, and huge brown trout still patrol the depths. Its big-fish reputation made it popular, prompting some fishermen to mount a petition drive calling for the state to impose catch-and-release restrictions to preserve the fishery.

WADE FREDENBERG

In fall of 1991, sportsmen's dollars paid for construction of a 600-foot-long spawning channel that will yield thousands of rainbow trout fry each year and eliminate the need to stock the lake.

A recent trout population study led by FW&P revealed an alarming lack of middle-sized rainbows in the lake, possibly because they're being eaten by the big browns. Biologists concluded that even if catch-and-release rules were imposed, Wade Lake's fishery would eventually peter out unless a strong population of naturally reproducing fish could be established or the lake were continually restocked.

One alternative to continual stocking was considered in light of the quality of the spring and the state's goal of establishing wild trout wherever possible. A decision was reached to create more spawning habitat, and that meant inviting bulldozers into the lake's most vital region.

"The spring was just too nice not to be put to use," explained Wade Fredenberg, a fisheries biologist for the department in Bozeman. "It's probably the best spring in the state that doesn't have a hatchery on it."

The reclamation firm proposed building a free-form, meandering channel that emphasized spawning habitat as well as pools in which spawning fish could rest.

> *" 'It's kind of like watching your mother-in-law drive your new Cadillac off a cliff,' said FW&P fisheries biologist Wade Fredenberg, as the big diesels chugged and clawed through the hillside above the lake."*

The natural channel could be replanted with natural vegetation to make it aesthetically pleasing.

"People are recognizing that the more you can replicate the natural environment, the more likely you will be able to create something that is functional and exceptionally appealing," said Dale Miller, a biologist for the reclamation firm.

But the proposal called for bulldozing 11,000 cubic yards of dirt from a hillside into the pristine lake to form a level pad on which to sculpt the channel.

That made Fredenberg and other officials nervous.

One concern was that sediment from the bulldozing would cloud the entire lake which is so clear you can toss a dime into it and read heads or tails from depths of 20 feet.

Another concern was that the sound of heavy equipment would upset campers and fishermen and hurt business at the nearby resort. Still another fear was that construction would disrupt nesting bald eagles and grizzly use of the area.

The U.S. Forest Service solicited public comment on the potential risks, but heard no complaints, said Bruce May, a fisheries biologist with the Gallatin and

Beaverhead National forests who was the co-sponsor and driving force behind the project. "You don't hear much about the white-hat projects," May said. "You hear a lot, though, when somebody has a gripe."

THE WADE LAKE CONSTRUCTION began after Labor Day, with crews building a fabric barrier across the lake to isolate the pad area. Buoyed by 50-gallon drums and anchored to the lake's bottom, the fabric curtain trapped mud and sediment while allowing water to pass through, preventing the lake from turning the color of chocolate milk.

The barrier didn't bother the trout a bit.

"You could see the fish feeding on the open side right up to the barrier," said May. "On one side, the water was absolutely clear."

Later, construction crews built an earthen berm around the pad site, pumped it dry of water, and began backfilling it with tons of dirt scraped from the adjoining mountainside.

"It's kind of like watching your mother-in-law drive your new Cadillac off a cliff," said Fredenberg, as the big diesels chugged and clawed through the hillside above the lake.

But with each shovel of dirt that turned the gin-clear water a muddy brown, the machines were helping to improve the fishing in Wade Lake.

With the pad complete, the reclamation firm began carving the spawning channel along a pre-determined gradient, then filled it with gravel for spawning beds, boulders for rest areas, and cobbles to give the young fish cover.

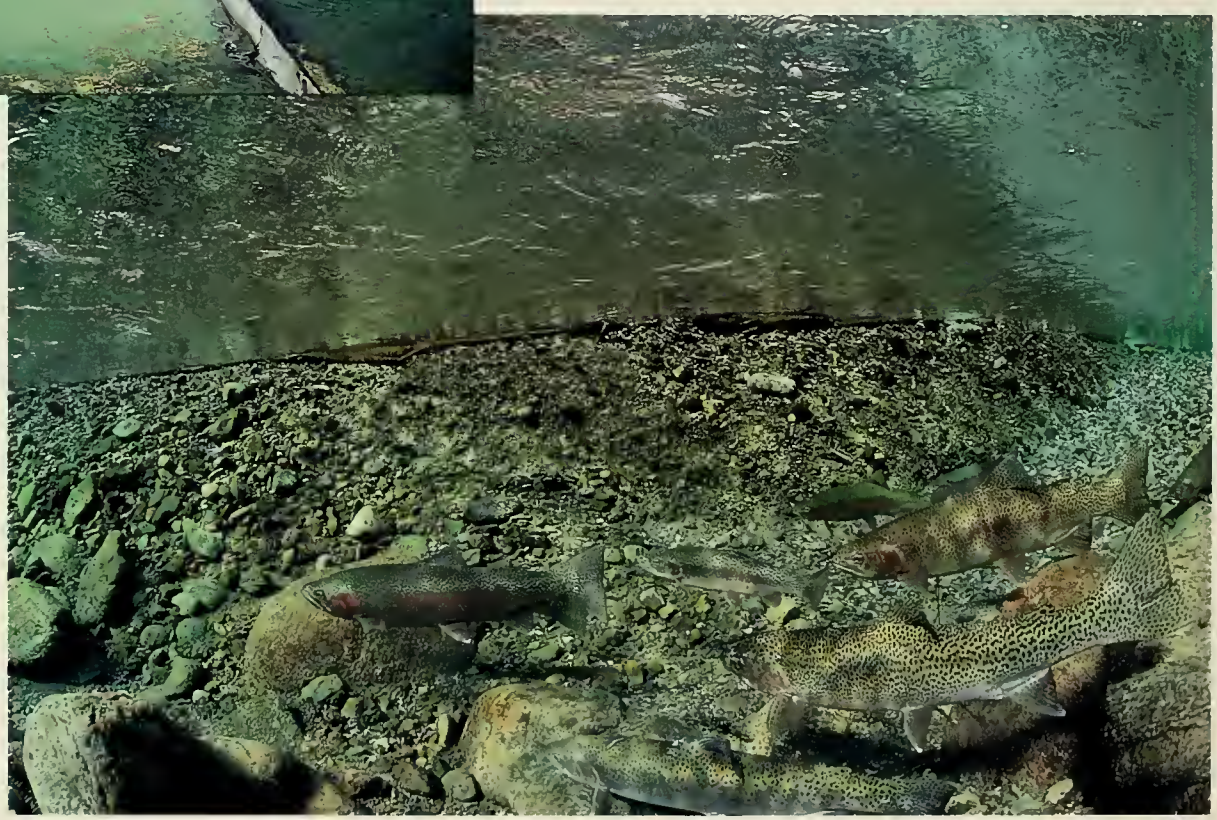
Banks of the channel were stabilized with a meshlike fabric made of woven coconut fibers, and the entire site was replanted with natural vegetation, including pink and purple wildflowers and willows to shield the spawning trout from ospreys and other aerial predators.

The channel sports a headgate at one end for controlling water flows and a fish ladder at the other, enabling biologists to regulate its use by fish. They can even shut it off completely if they want.

The Forest Service is so pleased with the outcome that it is considering putting up interpretive signs to explain to the public what ideal trout spawning habitat looks like, said May. "It's a long-term investment," added Fredenberg. "It allows us to do something that Mother Nature forgot. It's up to the fish now." ■

INTER-FLUVE, INC.

To prevent the whole lake from turning the color of chocolate milk, work crews built a fabric barrier (left) across the lake to trap mud and sediment during construction of the pad on which the spawning channel would be sculpted. Rainbow trout (below) now have an ample area in which to spawn.



MICHAEL S. QUINTON

DAVE BOOKS

YELLOWSTONE RENDEZVOUS

by KEN WALCHECK

Two splendid areas on the lower Yellowstone River maintain much of the integrity they held when explorer William Clark floated down the river in 1806. Both are grand sites, filled with nature's soft laughter and offering the chance to escape the soul-bruising press of modern life.

Today, we know them as Elk Island and Seven Sisters Wildlife Management areas, and they total more than 1,600 areas. Situated on the lower reach of the Yellowstone between Glendive and Sidney, each provides a measure of freedom and wildness, a contrast to surrounding landscapes that have been grazed, plowed, and put to cash crops. Here the river glides through streamside groves of cottonwood and green ash, a picture as tranquil and glorious as the river itself.

Elk Island and Seven Sisters alternate as the traditional gathering spot for four seasoned eastern Montanans—a rancher, a lawyer, a writer, and a pharmacist. They rendezvous twice a year, pitch a large wall tent, and fish for lunker catfish in the summer and hunt whitetails, pheasants, and turkeys in the fall.

The stories around the evening campfire range from hunting and fishing to other earthly topics like how great the good old days were and who's going to be the next governor. Old dreams and doings ramble on, meaning little except to those gathered there. Once in a while, though, often when the moon is full and the cork has been pulled out of the jug of Old Yellowstone, the discussion takes a distinctly speculative turn.

That's how it was during the rendezvous at Elk Island last summer. The rancher started out with the reasons why he thought areas like Elk Island and Seven Sisters were so important. "To someone like this graybeard who loves all of the outdoors, it's hard to realize that most Americans will never hunt or even set eyes on places like this. That doesn't mean they can't have a chance to share our heritage or our wildlife splendor, though. The

"As valuable as the wildlife management areas are to wildlife and hunters, they are also places that offer solitude to those who seek it.... Wildlife management areas are places where school kids can learn about the intricacies of nature, where more advanced students can research the complexities of our environment and, in some cases, where people with an interest in the past can probe to the roots of Montana's history."

Ring-necked pheasant RICHARD MOUSEL

Canada goose STEVE WIRT

opportunity to enjoy wildlife in quality natural surroundings is our birthright, and that kind of freedom in the kind of atmosphere that these places provide is really the stuff of the American dream.

"I've trekked through miles of pretty special country," he continued, "and I know that what you experience on such journeys is the best way in the world to get rid of what day-to-day living does to us." After apologizing for borrowing from someone else's words, the old boy said, " 'This sums up what I want in life...room to swing my arms and to swing my mind.' "

The lawyer looked around and sighed, "You know it takes about the first 50 years before you start learning the real facts about life. Look at me—I'm too old to charge up a coulee after a buck anymore. But I can better appreciate quality freedom in quality country.

"As the population continues to grow, more people will mean fewer resources and less wild country for each one of us. It's surprising how few people realize that the unique wildlife habitats carved from Montana's vast acreage over the past 50 years or so amount to only a few shavings. I've been told that the state's wildlife management areas make up less than one-quarter of one percent of all the land within our state's borders."

The tall, lanky writer shivered and tossed another chunk of cottonwood bark into the fire. "As valuable as the wildlife management areas are to wildlife and to hunters," he said, "they are also places that offer solitude to those who seek it. They offer

access to those who want to partake in the many recreational opportunities and beauty to those who are looking for it in a natural setting. Wildlife management areas are also places where school kids can learn about the intricacies of nature, places where more advanced students can research the complexities of our environment and, in some cases, where people with an interest in the past can probe to the roots of Montana's history."

The pharmacist was squatting Indian style beside the fire. "Lately," he said, "I've been thinking about my grandkids and what their lives might be like. If they don't get a chance to sample some of the outdoors experiences I've had in my years of roaming Montana, I'm gonna be pretty disappointed. Places like Elk Island and Seven Sisters are places where you build outdoors memories—the kind that will last the rest of your life.

"You know," he continued, "the greatest danger we face today is the kind who wants something for nothing. With no expense or effort, these folks demand places like this, and we sportsmen end up paying for it. If we're going to be able to continue to set aside areas like these, we're going to have to get these folks to kick in their share."

The rancher had been watching him intently, and he said, "I think we'll all drink to that."

DAVE BOOKS

The primary goal of Seven Sisters WMA is to provide hunting, fishing, and other outdoor recreation opportunities consistent with maintaining wildlife populations and the unique riparian ecosystem in healthy condition.

Seven Sisters Wildlife Management Area

Location: In Richland County, 10 miles southwest of Sidney.

Size: 555 acres.

Acquisition date: 1974.

Access: At milepost 41 on Highway 16, then one-half mile east on a graveled county road.

Management goal: To provide maximum hunting opportunities, primarily for white-tailed deer and pheasants, consistent with maintaining wildlife populations and the unique riparian ecosystem in a viable and healthy condition.

Special attractions: The site is bordered by approximately three-fourths of a mile of Yellowstone River side channel. Cottonwoods, grain fields, meadows, and backwater sloughs provide diversified habitat for various wildlife species. A wide assortment of other recreational activities—boating, trapping, bird-watching, and agate hunting—is also available. Because the main recreational pursuit at the area is hunting, development is minimal.

The Naming of Elk Island and Seven Sisters

There's little in the historical archives to suggest how Elk Island and Seven Sisters got their names. I suspect the islands were named during an excursion by the steamboat *Key West* up the Yellowstone in May of 1873. On this initial streamer probe up to the mouth of the Powder River, Capt. Grant Marsh was impressed, as were his crew and two companies of soldiers, by the scenic vistas that opened up before the steamer as she churned cautiously upstream.

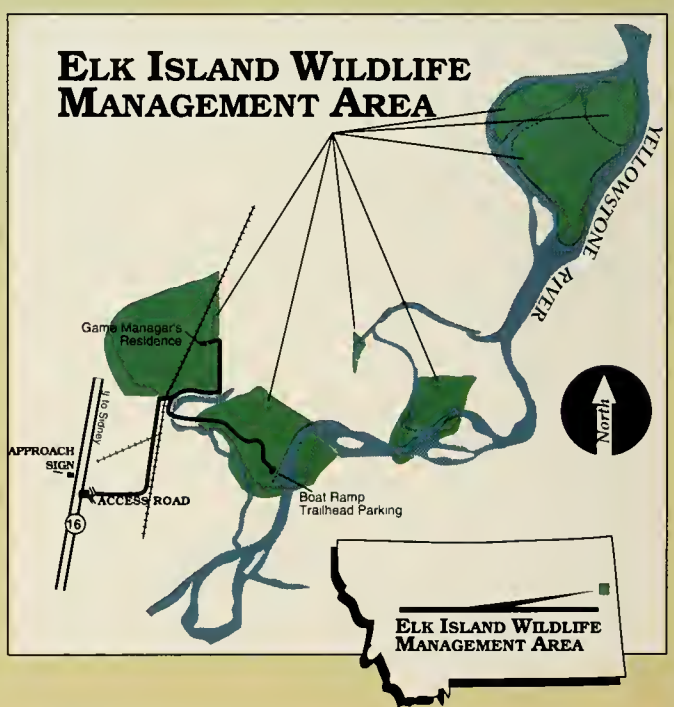
The ship's company named prominent landmarks along the river for one another, for wives and friends, and for other topographic features. The site of Seven Sisters, for example, is shown on early historical maps as comprising seven islands. Elk were abundant in the area and presumably the name was spawned when somebody on the steamer spotted an elk on the island.

JOHN ENSIGN

The primary goal of Elk Island WMA is to provide hunting, fishing, and other outdoor recreation opportunities consistent with maintaining wildlife populations and the unique riparian ecosystem in healthy condition.

Elk Island Wildlife Management Area

Location: Richland County, approximately two miles southeast of Savage.
Size: 1,046 acres.
Acquisition date: 1975.
Access: Between mileposts 32 and 33 on Highway 16, then one mile northeast on an all-weather county road.
Management goal: To provide maximum hunting opportunities, primarily for white-tailed deer and pheasants, while also maintaining wildlife populations and the unique riparian ecosystem in a viable and healthy condition.
Special attractions: Populations of white-tailed deer and pheasants provide excellent hunting. Sharp-tailed grouse, Canada geese, and mallards are common during fall. Several sloughs and small ponds in the area provide cattail and rush habitat for nesting waterfowl and furbearers. A boat launching ramp allows access to the river and islands. Other pursuits include agate hunting, asparagus and berry picking, bird-watching, trapping, boating and fishing, and wildlife viewing.



"HITCHING UP"

Even to this day, my parents claim I was a terrible traveler/camper. Growing up with my family wasn't easy. It seemed as if every summer of my childhood, my dad *had* to go camping out West. My brothers and I thought he was nuts.

Yes, he stopped at every bend in the road to take that "scenic" picture. "Get in the picture, guys...," I remember him saying, thus conning us out of the comfortable back seat of our station wagon to be in the picture. "Oh come on, Dad, it's the same stupid mountain as in the last picture!"

To this day, many of those shots are mysteriously child-free. My dad worked a high-stress job for almost 30 years. As soon as one summer trip was finished, he'd start planning next year's. Yes, we three sons hated being gone in the summer. After all, there were friends, more important girlfriends, the family dog, those endless lazy, hazy, crazy days of summer where we'd wallow in bed until all hours of the day, dreaming about what worthless activity might happen later in the day.

Then came that dreaded day: "It's 3 a.m. Get out of bed, it's time to 'hitch up.' " "Hitching up" was a family ritual that involved attaching our car to the Jolly Trolley, an 18-foot Leisure Time travel trailer. "Hitching up" was always a traumatic experience, most often before daylight, sometimes in the rain, usually pre-breakfast. It eventually got so habitual that the alarm went off and I ran to the front of the trailer in my underwear shouting, "Back it up, come on!" Funny, I don't remember my brothers helping out once in this process.

Dad never drove over the speed limit. It drove us teen-age back-seat drivers right up the wall. Thinking back, we must have been impossible. Inevitably, my older brother would fall asleep with his legs on my lap. My little brother always got the third seat to himself. There I was stuck in the middle. Then Dad would ask, "John, how about a neck rub?" I knew if I were ever to drive this Vista Cruiser with a 455 V-8, 365-HP engine, I better say "Yes." To this day, a neck rub still breaks down all of Dad's defenses.

We three boys slept through most of our Western adventures. Dad told us that someday we'd be sorry about what we had missed. In part, he was right. We can't re-live those adventures. But mostly, Dad was wrong. I can't speak for my brothers, who seem to prefer the warm, humid air of the tropical vacation spots. But every year as winter transforms to spring, I get this gnawing in my stomach and soul that tells me, "Go West."

Montana is a beautiful word. Just its vocalization makes me sigh. As a boy of 11 or 12, I can remember the crystal lakes of Beartooth Pass, the quaintness of Cooke City and Red Lodge, the wide-open solitude where Custer's troops fell at the Little Bighorn. One of my favorite sights is on I-90 headed toward Billings, with the Absaroka-Beartooth Wilderness as a backdrop. My mind begins to soar through the dark canyons, groves of aspen, majestic waterfalls. I could go on and on.

A few years ago, I was flying to the West Coast on business. Below me, the clouds suddenly opened up and there they were: the Beartooth Mountains, with Lake Yellowstone and the Tetons beyond. In a way, I felt bad that I had to fly *over* such a breathtaking sight. But I will never forget it.

My wife's boss owns a cattle ranch in the Big Hole Valley near Polaris. If all Americans and all America were like the inhabitants and countryside of the Big Hole Valley, we would all be a lot happier. We live in Cincinnati, almost 2,000 miles from Montana. It's a long drive, but it's not really a vacation. Our annual trek to the West has become a way of life for us. During our last adventure, we discovered the area surrounding East Rosebud Lake. While our car was almost shaken apart on the corrugated roads, it has given us a dream. On our next journey, we'll take a four-wheel-drive as far as the road goes, then our feet will take us as far as the trail goes. Somewhere in Montana, there will always be another magnificent mountain or valley that summons us just one more time.

So you see, Dad, all those trips weren't in vain. I know and understand that feeling you get each spring that tells you to "Go West." The most valuable thing I inherited from you? It's that gut instinct to put on your hiking boots and lose yourself somewhere in the beauty of Montana. Thanks, Dad. *—John M. Koch; Cincinnati, Ohio*

A MAGNIFICENT PICTURE ESSAY

I just received the January/February issue—what a beautiful and magnificent picture essay.

I have spent two vacations in Montana and am making plans to retire there. I only wish I could do it sooner!*—Wolfgang H. Erbe; Tacoma, Washington*

* * * * *

I just received my *Montana Outdoors* and how homesick I was when I looked at it.

I miss the fishing and hunting, but thank you for the good memories.*—the Rev. R.J. DeCarlo; Edmonds, Washington*

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In recent years, anti-hunting groups have begun to flex their political muscles a little bit. Hardly an issue of an outdoor magazine hits the newsstand without a story about a new lawsuit being filed to stop a hunt somewhere. These campaigns arrived in Montana recently with efforts to stop Montana's bison and grizzly bear hunts. These actions have elicited the predictable sense of outrage amongst many of the state's hunters. There is a feeling that something has to be done before these guys destroy the sport of hunting.

Before I continue, I would like to make one thing clear. I am not writing as an objective spectator on this issue. I am a hunter, I have been a hunter since I was old enough to hunt, and I strongly support sport hunting. There is nothing neutral about my feelings on this issue.

With that in mind, I would like to discuss some of the reactions which have been occurring as a result of these attacks on hunting. When the sport hunting of buffalo was discontinued, I began to hear a lot of criticism of the Legislature and the department for caving in to these guys. The theory was that you have to fight them at every turn, give them an inch and they'll take a mile, they are going to try and beat us one issue at a time until all hunting is banned. It is an appealing argument. It's a course of action that just feels good. After all, when someone attacks something that you cherish, there is a knee-jerk reaction in everyone to fight back then and there. The problem is that well-organized groups such as anti-hunters know precisely where we are the most vulnerable in public opinion and that is where they strike first. It is often not the best place to make our stand.

THE ANTI-HUNTING WAR IS NOT GOING TO BE WON OR LOST IN MONTANA. IT IS GOING TO BE WON OR LOST IN FRONT OF THE TV SETS OF PEOPLE IN INDIANAPOLIS, CLEVELAND, AND NEWARK.

There is about 10% of America that absolutely supports sport hunting. There is about 10% that is dedicated to seeing it banned. The remaining 80% is, to varying degrees, somewhere in the middle. This is the group which will ultimately decide the issue. This is the group the anti-hunters are trying to enlist. It is the group we cannot afford to alienate.

I can remember back around the early '70s when the issue of clubbing fur seals emerged. One of the animal rights groups began a campaign to have the event banned. I can still remember the pictures of the faces of the baby seals in magazines and the newsreels of men clubbing them to death by the thousands as they flopped around helplessly on the ice. There were, of course, some statements from the government that the seals were in no danger of extinction, etc.

NOBODY LISTENED. THE PICTURES SAID IT ALL. PUBLIC OUTRAGE WAS INSTANTANEOUS.

Millions of dollars poured into the animal rights groups to stop the slaughter. Millions of people joined the groups and began writing letters. The final results were that the hunts were banned, the gov-

by Jim Heck

WAR

ernment agencies which had supported them were largely discredited, and overnight some small-time animal rights crusaders became powerful international organizations.

Now I realize that it is not altogether fair to compare the large-scale commercial bludgeoning of baby fur seals to Montana's buffalo hunt, but a lot of the same elements are there.

Anti-hunting groups have been looking for decades for a hunting situation which would offend the sensibilities of the American public to such an extent that they would become supporters of the anti-hunting movement.

If I were running the anti-hunting movement, I would be delighted if Montana chose to make a major, well-publicized battle over the buffalo hunt. I really wouldn't even care if we won or lost the battle. The publicity and the film footage would do more to draw support for the anti-hunting cause than anything that we could devise.

Every military commander knows that you don't yell "charge" every time you see an enemy soldier. You pick your battles. You attack when the odds are in your favor. At times you avoid a confrontation and at times you even retreat. The object has to be to win the war.

The problem with the buffalo hunt was that buffalo are just too easy to kill. They stand in open areas and are easy to locate. You can drive right up to them and they don't usually run. Even after the shooting starts and buffalo have been killed, the others just stand there. Even the last standing buffalo seemingly fails to see an alarming pattern developing. Everyone who has ever gone on a buffalo hunt has gotten a buffalo and that includes some pretty inexperienced hunters.

Anti-hunting groups do their best to convince the non-hunting public that this is how all hunting is. When news footage of these hunts is aired, it simply reinforces this thinking.

I have been discussing the buffalo hunt simply because it was the first situation to develop in Montana. There will be more hunts that are challenged in the future. As these situations arise, I hope that we will look at each case and pick our battles carefully. A "fight them at every turn" attitude may feel good, but it may not ultimately be the best way to fight the war.

Recreational hunting is a wonderful sport. Many of my best memories are of hunting experiences I have enjoyed. I truly hope that nothing ever happens which will jeopardize the sport of hunting. I do not, however, believe that every type of hunt ever devised is without its flaws. If someone challenges a hunt or a season or a bag limit, we should examine the hunt and determine whether the hunt is being handled in the best possible way. If not, we should change it. If we examine it and believe that it is being conducted properly, we should then marshal all of our efforts in its defense. Making such determinations is not always a simple task. There are just about as many opinions regarding hunting as there are hunters.

...We must avoid being drawn into untenable positions simply through a knee-jerk reaction to the filing of a lawsuit. The anti-hunting question isn't going to go away any time soon, nor is it ultimately going to be won or lost in a lawsuit over a particular hunt. It will be won by the group that maintains its credibility and garners the support of the majority of the non-hunting public.

—excerpted from the Winter/Spring 1992 issue of *The Montana Game Warden*

Contributors

• "We are creatures of land. When we dive into water and exchange firm ground for the fluid realm of our ancestral past, we remain visitors among water dwellers. Not so for the dipper, also called a water ouzel. This plump, starling-sized inhabitant of western mountain streams moves easily between land and water." Thus **Deborah Richie** opens a fascinating glimpse into the world of the "Underwater Flier." She notes we may never solve the mystery of why dippers dip. She explains why a dipper is like a scuba diver. And she marvels at the crystal notes of a singing dipper harmonizing with the music of the stream. Richie recently began her duties as a wildlife interpretive specialist, working for the Department of Fish, Wildlife & Parks in Missoula, in cooperation with the U.S. Forest Service. In 1991 she won the Regional Forester Award for her leadership and coordination with the Forest Service in developing the Montana Watchable Wildlife Program. Her article begins on page 2.

• **Jim Mepham** and **Steve Torna** are wildlife photographers and they consider "Death at the Goat Lick" a once-in-a-lifetime experience. They spend hours outdoors photographing and have never before been within camera range of the elusive mountain lion. What they witnessed in Glacier National Park on a late-March day of this year—a single mountain lion killing two goats—truly was an awe-inspiring experience. Turn to page 8 for their "Perspectives," both in words and pictures. Mepham teaches chemistry and physics at Browning High School; he is owner of the Great Bear Gallery in Hungry Horse where his work can be seen. His work has also appeared in previous issues of *Montana Outdoors*. Torna is a dentist with the Indian Health Service in Browning. His work appeared in the 1992 Special Photo Issue of *MO*.

• Wild trout and Montana are synonymous. But to have a self-sustaining trout population in a lake or reservoir, there must also be adequate spawning streams or springs with good flows of high-quality water. Wade Lake, a high-mountain lake in southwestern Montana, met all the qualifications, except in the area of spawning habitat—it had a mere 40-square-foot bed of gravel. So state and federal agencies moved part of a mountain and paid a natural resource reclamation firm to create a meandering, 600-foot-long spawning channel at the lake's source. For proof that "Montana Moves Mountains for Wild Trout," turn to **Tad Brooks'** article on page 15. Brooks is the managing editor of the Hungry Horse News in Columbia Falls. He is also co-author of "The Hiker's Guide to Montana's Continental Divide Trail."

• Both Elk Island and Seven Sisters Wildlife Management areas are "grand sites, filled with nature's soft laughter and offering the chance to escape the soul-bruising press of modern life." So writes **Ken Walcheck** in this issue's installment of our "Lands Legacy" series. But Walcheck takes a slightly different approach; he uses the areas as the site of a traditional gathering spot for four eastern Montana characters. And it is through their eyes that you will see the freedom and wildness that the two areas offer. Walcheck continues as the department's information officer in Miles City. Join him for "Yellowstone Rendezvous" on page 19.

• **Jim Heck** is a game warden for the department in Bozeman. His feelings about sport hunting are not neutral, and an editorial he wrote for the Winter/Spring 1992 issue of *The Montana Game Warden* contained such a timely, valuable message that we asked to reprint excerpts from it in this issue. Every person concerned about the future of hunting needs to think about his point: "The anti-hunting war is not going to be won or lost in Montana. It is going to be won or lost in front of the TV sets of people in Indianapolis, Cleveland, and Newark." For now, turn off your TV and turn to page 24 for Heck's thoughts on "Winning the War."

• The study of grayling has occupied fisheries biologist **Patrick A. Byorth** for the last few years. As a biologist for the department and in association with the Montana Power Company, he studied the Madison grayling population from February 1990 through September of 1991. Since, he has worked on the Big Hole grayling project for FW&P. His conclusion: Montana's fluvial (stream-dwelling) grayling population is a "Native on the Brink." While lake-dwelling grayling have prospered, the once-abundant fluvial graying have not fared well. As he notes, the Big Hole River and a few of its tributaries "contain the last truly fluvial grayling population in the lower 48 states." To find out what happened and what restoration efforts are under way, turn to Byorth's article on page 27.

• With summer in full swing, a visit to any of Montana's state parks could turn out to be "A Celebration of Discovery." But be sure to head for Lewis and Clark Caverns State Park on August 8 and 9. "Discovery Days" will be the theme of celebration to honor the discoverers of Lewis and Clark Caverns. A potluck picnic, special candlelight tours of the caves, and historical tours and lectures by Caverns staff and in-the-know old-timers are part of the festivities. In addition, a reunion is scheduled for Civilian Conservation Corps workers who did much of the work on the caverns in the late 1930s. For an enticing preview, turn to **Bernie Kuntz's** article on page 32. Kuntz is the department's information officer in Bozeman.

• Many readers will recognize the **Shirley Cleary** touch on the front cover, featuring "Jumping Grayling" on the upper Big Hole River. She specializes in Montana fishing and water scenes, and her work has enhanced our pages on many previous occasions. The Helena artist won the Oregon Trout Print and Stamp Contest in 1990 and the Northwest Steelheaders Print and Stamp Contest in 1992. Watch for a feature on her work in the September issue of *Wildlife Art News*. For information about her work, contact her at her studio: 1804 Belt View Drive; Helena, MT 59601 (406/443-4535).

• *MO* thanks the following photographers and artists for their contributions to this issue: **Robert E. Barber**, Arvada, Colorado; **Shirley Cleary** and **Sean Logan**, Helena; **Harvey Eckert**, Ennis; **Phil Farnes** and **Inter-Fluve, Inc.**, Bozeman; **Michael H. Francis**, Billings; **Lee Kaiser**, Kalispell; **Mark Lagerstrom**, Darby; **Jim Mepham**, East Glacier; **Richard Mousel**, Fort Benton; **Charles B. Place, III**, Lolo; **Michael S. Quinton**, Macks Inn, Idaho; **Lee Rentz**, Shelton, Washington; **Steve Torna**, Browning; and **Steve Wirt**, Whitefish. Thanks also to the following contributors who work for the department: **Patrick A. Byorth** and **Dick Oswald**, Dillon; **Mark Deleray**, Kalispell; **John Ensign**, Glendive; **Wade Fredenberg**, Bozeman; and **Craig Jourdonnais**, Helena.

MARK DELERAY

NATIVE
on the brink

by PATRICK A. BYORTH

The term "ice age" conjures up images of primitive cavemen hunting saber-toothed tigers and woolly mammoths in a fog-shrouded world of rock and ice. But aside from providing fodder for active imaginations, the various ice ages carved the landscape and rearranged much of the flora and fauna that we enjoy today in Montana. The most recent ice age, the Wisconsin Glaciation, peaked 18,000 years ago and ended some 10,000 years ago. As the continental glaciers receded, profound environmental changes drove some plants and animals to extinction and altered others so that they scarcely resemble their ancient predecessors. Other species endured and are here to remind us of Montana's past.

The Montana Arctic grayling *(Thymallus arcticus montanus)* is among the ranks of glacial survivors still found in Montana, along with the lake trout, bighorn sheep, and mountain goat. After the last ice age, grayling were left behind in three isolated "refugia," or glacier-free portions of Alaska, Michigan, and Montana. From the Alaskan refugium, Arctic grayling expanded their range throughout Alaska and northwestern Canada, where they are still abundant. The grayling of the lower 48 were not as fortunate. The Michigan grayling, decimated by excessive harvest, introduced species, and land-use changes, became extinct in the late 1930s. The Montana grayling has persisted, but with mixed success.

Meriwether Lewis sent a company of

the Corps of Discovery out fishing on the Beaverhead River one August day in 1805. In his journal, Lewis reported that the Corps "...caught 528 very good fish, most of them large trout, among them I now for the first time saw ten or a douzen of a white speceis of trout...."

Captain Lewis' "white speceis of trout" is thought to be the first description of the Arctic grayling by European man. At that time, grayling were abundant and distributed intermittently throughout the upper Missouri drainage from the Great Falls area to the headwaters. Popular Montana rivers like the Smith, Sun, Madison, Gallatin, Jefferson, Beaverhead, and Big Hole supported native populations of grayling. These were fluvial grayling, living their life cycle entirely in streams. Only the Red Rock Lakes area in the Centennial Valley is thought to have supported lake-dwelling, or lacustrine, grayling. Most lake grayling are adfluvial, which means they move into streams only to spawn.

Over the following century and a half, many species of fish, mostly trout, were planted in lakes and streams across Montana. Grayling were no exception and are now found in over 30 alpine lakes and reservoirs throughout the state. While lake grayling have prospered, the once-abundant fluvial grayling have not fared well. Of all the native grayling populations, potentially only three remain: the Red Rock Lakes grayling, the Madison River grayling (see sidebar), and the fluvial grayling of the Big Hole River drainage. Lake grayling differ from fluvial grayling both behaviorially and genetically. Dr. C. M. Kaya of Montana State University compared the behavior of young lake and fluvial grayling and found that while young fluvial grayling could maintain their position in a current, lake grayling tended to lose their position and swim downstream. Genetic analyses conducted at the University of Montana Trout and Salmon Genetics Laboratory, using a process called protein electrophoresis, have established that grayling in Montana fall into two major groups: (1) the Red Rock Lakes group, which contains primarily lake populations, and (2) the Big Hole/Madison group, which includes stream grayling, two lake populations in the Big Hole basin, and the Madison River-Ennis Lake population. This genetic information indicates that fluvial grayling are different from most lake grayling, and are a rare commodity.

The Big Hole River and a few of its tributaries contain the last truly fluvial grayling population in the lower 48 states. What happened to the other fluvial grayling? Generally, the decline of fluvial grayling is attributed to climatic change, introduction of exotic fishes (like the rainbow, brook, and

MARK LAGERSTROM

The Big Hole River (above) and a few of its tributaries contain the last truly fluvial (stream-dwelling) grayling in the lower 48 states. Biologists from several state and federal agencies, Montana universities, and private organizations are working to increase the abundance of these rare grayling and eliminate any danger of their extinction.

brown trout), habitat degradation (dam construction, dewatering), and overharvesting. Each of these factors has played a role in the decline of Montana grayling, and may still be at work on the Big Hole grayling.

During the 1980s, Department of Fish, Wildlife & Parks (FW&P) biologists detected a decline in grayling abundance in a study section near Wisdom. The number of adult grayling fell from approximately 111 per mile in 1983 to a low of 27 per mile in 1989. After several years of severe drought, the density appears to have stabilized around 34 grayling per mile, a dangerously low level.

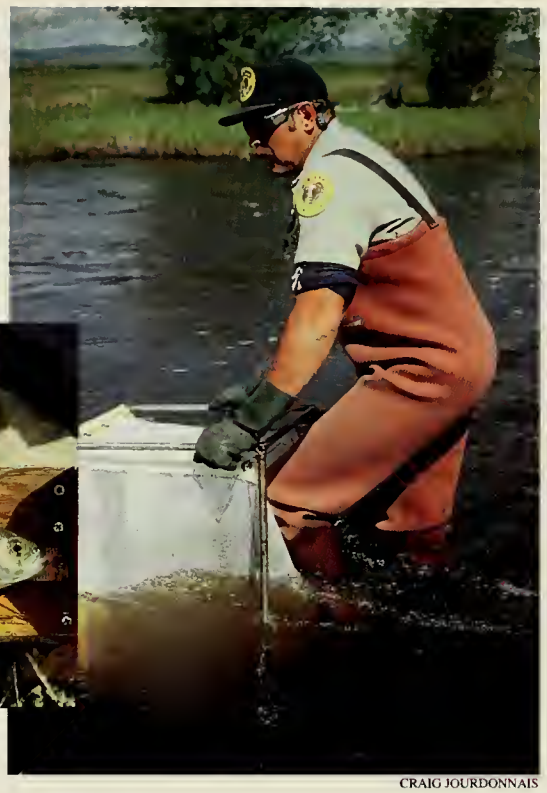
Concern for the future of the fluvial grayling has been revived in recent years, but it is not new. In 1930, J.L. Kelley, a member of the Montana Fish and Game Commission, wrote the following in *Montana Wildlife*: "We are mindful of the task we have before us in preventing the extinction of this wonderful fish, and we are doing all that is humanly possible under our financial handicap to preserve the grayling for this and future generations."

More recently, fluvial Arctic grayling have received such dubious distinctions as being petitioned for endangered species status under the Endangered Species Act and being classified as "species of special concern" by the FW&P, the American Fisheries Society, and the Montana Natural Heritage Program of The Nature Conservancy. The U.S. Forest Service considers the Arctic grayling a "sensitive species."

The resurgence of concern for Montana grayling led in 1987 to formation of the Fluvial Arctic Grayling Workgroup, a collection of fisheries professionals from several state and federal agencies, Montana universities, and private organizations. The workgroup initiated several investigations into the life history of the Big Hole grayling and established a reserve broodstock to preserve the rare gene pool. A long-term plan was then developed to protect and enhance fluvial Arctic grayling in the Big Hole basin. The plan has been used as a framework for an agreement between the workgroup agencies and the Montana Council of Trout Unlimited to fund a research and restoration project

To gauge success of the restoration program, the Big Hole grayling population must be monitored over time. Fish are periodically captured through electrofishing, measured, marked, and released.

PATRICK A BYORTH



CRAIG JOURDONNAIS

aimed at preserving fluvial grayling and preventing their extinction. In addition, a nonprofit corporation, the "Big Hole River Arctic Grayling Recovery Fund," has been formed to raise funds and aid in recovery efforts.

The long-term goal is "to increase abundance, expand the range, and conserve the genetic integrity of Montana fluvial Arctic grayling to eliminate any danger of extinction." Over the next four or five years, researchers will conduct a variety of studies to identify factors limiting grayling in the Big Hole basin, and to monitor and enhance the population.

The environmental factors that influence a species' ability to survive and reproduce are known to ecologists as limiting factors. In the Big Hole basin, limiting factors influencing the grayling population might include: competition with other species; predation by other fishes, birds, mammals, or anglers; water quality and quantity; and habitat quality and quantity. As limiting factors become known, they can be addressed to stabilize the grayling population.

Angling is a potential influence on grayling. Because they are easily caught, they provide a splendid recreational opportunity. Due to their vulnerability to anglers, the Big Hole grayling have been managed under catch-and-release regulations since 1988. To investigate the potential influence of anglers on the grayling population, a voluntary creel census will be conducted in the Big Hole basin. Creel census stations will be placed at key access points along the river, and anglers will be asked to fill out and return creel cards on-site. The information will be used to guide future management.

Another set of factors limiting the grayling population involves water quality and quantity. The Big Hole Valley is renowned for its high-quality hay and cattle production. Unfortunately, recent drought years have limited the availability of water for irrigation and fish habitat. In a cooperative water conservation effort, landowners, water users, and project biologists hope to improve summer flows to lower water temperatures and improve habitat conditions.

FW&P biologists will also conduct a basinwide survey to define other habitat factors that may be limiting grayling abundance. We know that grayling require clean, freshly deposited gravels for spawning and deep pools for security, and that they may rely on upwelling spring areas during the winter. Our goal is to develop a map of grayling habitat for the majority of the Big Hole basin that can be compared with maps of grayling and trout distribution, seasonal habitats, and spawning and rearing areas. Once we know what is available and what is limiting, we can take actions to improve habitat that may be unsuitable or degraded.

To gauge success of the restoration program, we need to know the present size of the Big Hole grayling population and be able to monitor its response over time. Through electrofishing, an important tool biologists use to survey populations, we can capture large numbers of fish for measurements and marking, and release them with minimal effects. Segments of the Big Hole River will be electrofished to monitor the grayling population as the project progresses.

Over time, these restoration efforts should spur an increase in grayling numbers. In the event they do not succeed, a genetic reserve stock has been developed to preserve the fluvial grayling gene pool and provide a source of fish for enhancement. Over the past several years, biologists from the FW&P and U.S. Fish and Wildlife Service (USFWS) have collected eggs and milt from wild Big Hole grayling and raised the young at the USFWS Fish Technology Center in Bozeman. A broodstock has been maintained at the center and also planted in a barren lake in the Gravelly Range. Along with wild Big Hole grayling, these reserve stocks will be spawned to increase the genetic variability. Because the reserve stocks originated from a small number of parents, it is unlikely that the complete range of fluvial grayling genes was captured. Increasing the genetic variablity of the reserve stocks will make them more suitable for reintroduction into the Big Hole River, if and when it becomes necessary. Until then, small-scale plants may be made in the Big Hole River and other streams to investigate methods that will ensure

better survival of future plants. Also, by reestablishing fluvial grayling in other parts of their historic range, the chances of a catastrophic event (drought, flood, earthquake) driving them to extinction are decreased.

We hope these research and restoration efforts, along with public support and education, will prevent the extinction of a long-time Montana resident, the fluvial Arctic grayling. Montana is unique in a variety of ways, especially in the quality and diversity of its wildlife and wildlands. We may have differing views on how these wild resources should be used and protected, but we all share a common appreciation for the extraordinary quality of life here. The fluvial Arctic grayling is a precious resource unique to our state, and to lose it would be to lose an integral part of Montana's wildlife heritage.

Aldo Leopold, a pioneer in conservation, stated: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community, it is wrong when it tends otherwise."

We have an opportunity to preserve the fluvial Arctic grayling because "it's the right thing to do." We must approach the recovery effort as Montanans unified: landowners, sportsmen and women, business people, and concerned citizens working together to prevent loss of a precious "native on the brink." ■

PATRICK A BYORTH

Madison River grayling are considered adfluvial, or lake-dwelling, in that they live in Ennis Reservoir and enter the river to spawn.

DICK OSWALD

Arctic Grayling in the Madison?

Yes, Montana, there are grayling in the Madison! They too, have persisted through centuries like their close cousins in the Big Hole River. However, the Madison River has changed considerably over the past 100 years. Around 1900, the Madison Dam was built at the head of Beartrap Canyon, forming the 3,500-acre reservoir known as Ennis, or Meadow, Lake.

Over the years since Ennis Lake first inundated its shallow basin, grayling numbers have undergone severe fluctuations. The changes in grayling abundance in the reservoir, and consequently the Madison River, can be attributed to many causes, among them the introduction of non-native species and fluctuations in reservoir levels. The most recent decline in grayling numbers came on the heels of a major drawdown in the early 1980s.

The Madison grayling are considered adfluvial, in that they live in the reservoir and enter the labyrinthine Madison River channels to spawn. Although the reservoir probably provides crucial habitat, there is some indication that Madison grayling still exhibit their fluvial origins. Grayling have been caught by anglers over 30 miles upstream from the reservoir. Anglers also catch one occasionally below the dam in the Beartrap Canyon, where they appear to thrive in the fluvial environment.

Although the Madison grayling are no longer strictly fluvial like the Big Hole grayling, they probably represent a remnant population of the original Madison River grayling. A long-term research project funded by Montana Power Company and conducted in conjunction with FW&P will expand our knowledge and help us protect and restore this native Arctic grayling. Anglers fortunate enough to catch a wild Montana grayling from a stream (or Ennis Lake) should take a couple of seconds to admire its delicate beauty and then gently release it to spawn another day.

A Celebration of D

by Bernie Kuntz

"Discovery Days" will be the theme of a celebration to be conducted August 8 and 9 in honor of the historical discoverers and developers of Lewis and Clark Caverns. The event will be an incentive for people to rediscover this interesting state park and historical site.

In conjunction with Discovery Days, the Montana Conservation Corps (MCC), not to be confused with the Civilian Conservation Corps (CCC), will construct a log CCC-style camping cabin. The cabin will be located in the campground and will be dedicated in honor of the CCC—an organization that like the MCC, harbored the same idea of putting young people to work in a wholesome, outdoor environment, and teaching them life-long skills.

"We have an extensive list of CCCers who worked at different projects all around the United States in the 1930s," says Lee Flath, parks manager at Lewis and Clark Caverns. "They will be sent invitations to attend Discovery Days, and the first day of the event will be dedicated to them."

CHARLES B. PLACE, III

LEE KAISER

ISCOVERY!
PHIL FARNES

A giant potluck picnic will be held Sunday, August 9, for all former state and concessionaire employees of the Caverns. All CCC employees and former workers will be given complimentary tour tickets for themselves and for one additional family member to tour the Caverns.

There will be candlelight tours of the cave both evenings at 7:15 and 7:30; these tours require advance reservations. Also, there will be special historical tours given by Caverns staff as well as key old-timers. Additional historical displays will be shown in the visitor center and adjacent patio area.

Guest lecturers will provide programs on historically oriented themes both evenings at 8:45 p.m. at the campground amphitheater.

"It promises to be an exciting and entertaining two-day celebration of the past," Flath said. "It also will show people where the Montana State Park System is heading as we continue toward a new century."

It all began in November 1892 when two friends were deer hunting above the Jefferson River on what is now known as Cave Mountain. The young men, Tom Williams and Bert Pannell, noticed an area bare of snow and a plume of steam emerging from what they discovered was the entrance to a cave—later to become known as Discovery Hole. (The cave remains 50°F year-round, and the moist air condenses to form a cloud of steam on cold, still days.)

The men had no way of knowing the significance of their discovery, but Williams made note of the site and vowed to return with a rope, lighting sources, and a back-up crew of friends to help him with the initial exploration. He returned in 1898—six years after the discovery of the "Hole-in-the-Rock." With him were three other Willow Creek area ranchers—Fred Creecy, Lee Robertson, and E.C. Woodward. The latter two men and Williams made the first known descent into the caverns, perilously lowering themselves with ropes. Using candles perched on the brims of their hats, they spent several hours underground.

No one knows how far they ventured into the cave, but it is believed they went no farther than the deep pit that still confronts visitors. Now known as the Spiral Staircase Pit, due to the structure that was placed there during early development, this pit drops vertically for 120 feet.

"They would no doubt have had to procure additional rope to explore beyond that point," Flath said. "One can

Interpretive displays, a visitor's center, and guided tours await visitors to Lewis and Clark Caverns State Park.

LEE KAISER

CHARLES B. PLACE, III

only doubt that they would have had that much heavy manila or sisal rope with them. It appears there must have been a number of early explorations that took place."

The explorers later said they found it necessary to break off numerous stalactites and other cave formations to continue into the depths of the cave. In any case, Williams, Robertson, and Woodward opened the wonders of Lewis and Clark Caverns to the eyes of the world.

Williams later approached local entrepreneur Dan Morrison with the idea of developing the cave into a tourist attraction. Morrison, who at that time was operating a limestone quarry called "Limespur" at the base of Cave Mountain in Jefferson Canyon, liked the idea and soon the cave became known locally as "Shoshone Caverns," "Limespur Cave," and then as Morrison's development continued, "Morrison's Cave."

Morrison had 2,000 wooden steps built in the cave, including the spiral staircase that allowed visitors to descend into the otherwise inaccessible pit to view the astonishing passages. Morrison publicized the cave nationally and also in Europe—an advertising blitz that was to lead to his downfall. When he tried to gain title to the land containing the entrance to the cave, he learned that this particular section of land had been granted to the Northern Pacific Railway when the company built track through the Jefferson River Canyon in the 1880s. The railroad had realized the potential of "Morrison's Cave," and was not about to turn it over to him. Subsequent filing on mineral claims by Morrison, a lawsuit, and even a petition to Congress for $40,000 reimbursement of his services and expenses incurred through discovery and exploration were unsuccessful. Finally, in 1929, Morrison received $5,000 from the 70th Congress.

President Theodore Roosevelt in 1908 proclaimed the cave to be Lewis

Stalactites, stalagmites, columns, and other calcite formations decorate the Caverns' many rooms and passages.

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and Clark Caverns National Monument, the 12th national monument to be created during his presidency.

Since the National Park Service did not exist at this time, the Caverns technically was closed to the public until it became a state park in 1937. However, Morrison continued to conduct limited tours of the cave to recoup part of his development investment.

During this period, tours originated in Butte, where a railroad car filled with visitors would be towed out of town, then left on a siding along the Jefferson River at the base of Cave Mountain. The visitors would have to climb 1,400 vertical feet to the cave entrance, tour the cave, retrace their steps through the cave, then drop down to the railroad car and make the return rail journey to Butte. A Caverns tour in those days was an all-day event.

When the National Park Service (NPS) was created in 1916, the agency decided that with the remote nature of Lewis and Clark Caverns, and considering the number of high-profile caves in the National Park System, the Caverns would be given a low priority until means could be found to safely open it to the public.

With the onset of the Great Depression and President Franklin Delano Roosevelt's CCC Program came the means. Young men from the CCC developed the Caverns (see sidebar), and it was turned over to the state of Montana in 1937.

So as we celebrate the first 100 years of man venturing into the unknown recesses of the "The Paradise Below," we must continue to be aware of the fragility of the Caverns.

Parks Manager Lee Flath has said, "People are unnatural invaders to caves, and they can only visit for a short time."

Flath, who was one of the mappers of Lewis and Clark Caverns in the late 1970s, stresses that his staff will continue with cleaning, restoration, and education to preserve the Caverns, even after some 2.5 million people have visited it.

The Caverns staff is dedicated to preserving this treasure so that 100 years from now, another celebration of discovery can be held at the jewel of the Montana State Park System. ■

"I Discovered This Cavern"

Lee Flath, parks manager for Lewis and Clark Caverns, helped map the Caverns in the late 1970s. He also was on hand in April 1991 when the Department of Fish, Wildlife & Parks' Caverns video "The Paradise Below" was being filmed. Flath discovered in the entrance area of the Princess' Palace (a large room immediately adjacent to the tourist trail, but not included on the tour), some graffiti scrawled on the side of a column. It had been covered over with white paint. (Paint was used in the cave to cover graffiti generated by vandals.)

The "graffiti" reads, "I discovered this Cavern. Returned (unreadable date) 1923—E. C. Woodward."

Woodward is buried next to Tom Williams in the Willow Creek Cemetery.—*Bernie Kuntz*

The CCC Boys

With the onset of Franklin Delano Roosevelt's New Deal, the Civilian Conservation Corps (CCC) became a way to employ young men suffering from the throes of the Depression and to complete some valuable public works projects. Much of the work at Lewis and Clark Caverns was done by the CCCers during the late 1930s. Workers were paid $25 a month plus room and board; work leaders received $31 a month.

Approximately 200 young men were housed at LaHood Park, just west of the Caverns at Camp No. 574, SP-3. They lived and worked out of this camp from 1935 until 1941, and many of the improvements they completed are still evident at the park.

The CCC workers are the ones who made this park what it is today, and they are the sole reason the public can now safely view the wonders of Lewis and Clark Caverns.

LEE KAISER

"Head-house lodge" visitor center.

Among these accomplishments were:

* Construction of a trail through the underground passages of the cave.

* Blasting of a 538-foot exit tunnel which allowed for a one-way trip through the Caverns.

* Construction of a 3.2-mile entrance road up Greer Gulch from the Jefferson River.

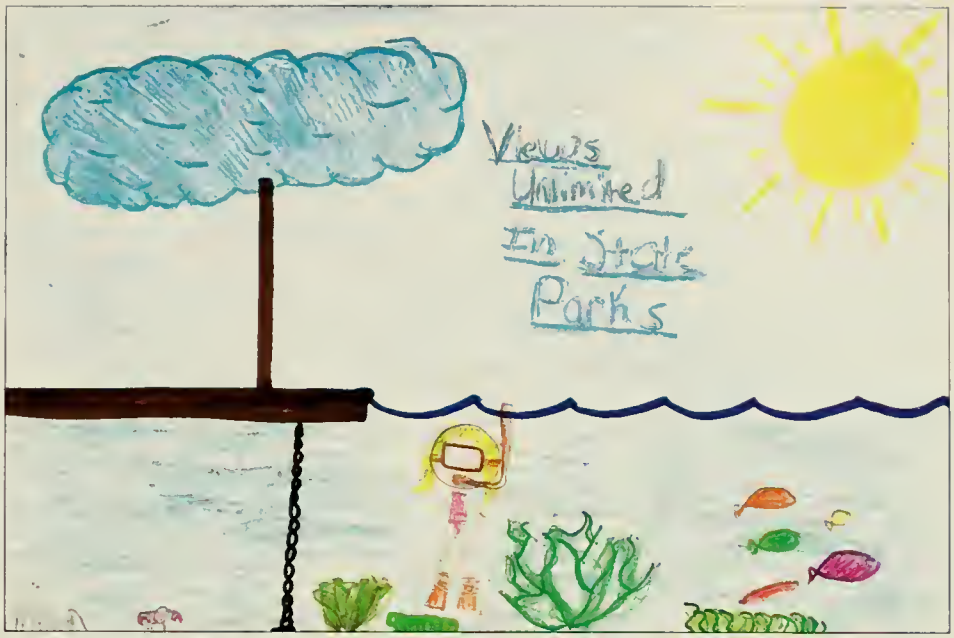
* Construction of massive bridges along a route which resembles the Going-to-the-Sun route in Glacier National Park.

* Construction of picnic areas.

* Construction of the "head-house lodge" visitor center.—*Lee Flath*

Fifth Graders Draw On State Parks

by Debbie Cheek



First place—Katy Marvel, Eureka Elementary School

Second place—Joshua Barker, St. Charles Mission School

Third place—Dustin Chalcraft, Eureka Elementary School

Katy Marvel, a fifth grader at Eureka Elementary School, won the first State Parks Poster Contest with her clever, colorful rendition of a day of summer fun at Whitefish Lake State Park. Conducted by the Parks Division of the Department of Fish, Wildlife & Parks as a way to promote awareness of the state's parks and their many recreational and educational opportunities, the contest was open to all Montana fifth graders.

Katy's poster was selected by a panel of five judges in Helena. She will receive a $150 savings bond, and her school will receive a video about Lewis and Clark Caverns and a copy of "Great Escapes," a book highlighting the many features of Montana's State Park System.

Joshua Barker, a student at St. Charles Mission School in Pryor, took second; he won a $100 savings bond for his rendition of Chief Plenty Coups State Park. Dustin Chalcraft, also a student at Eureka Elementary, won a $50 savings bond for his third-place poster of Flathead Lake State Park.

Receiving honorable mention in the contest were: Jacob Gronley, Edgerton Elementary School, Kalispell; Tracy Shottanana, Eureka Elementary School; Mardi Slocum, Four Georgians Elementary School, Helena; and Jody Maphies, Bryant Elementary School, Helena. All 34 students whose posters were submitted for final judging will receive t-shirts with the winning poster design printed on the front.

Before they are returned to the artists, winning posters will be displayed at the department's regional headquarters: Billings—July 6-24; Bozeman—July 27-August 14; Great Falls—August 17-September 4; Missoula—September 7-25; and Miles City—September 28-October 9. ■